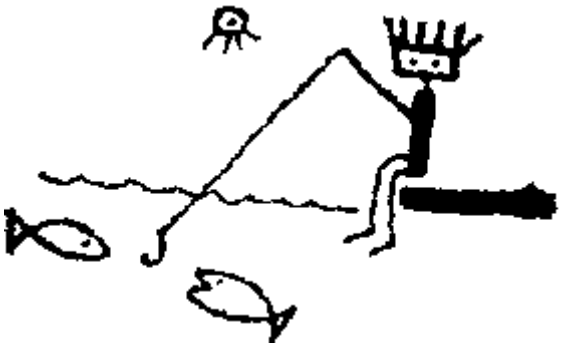
November 27, 2002

San Juan River Basin Recovery Implementation Program Biology Committee February 19 - 21, 2002 Meeting Summary



Members Present:	**Representing:**
Jim Brooks, Chairman	U.S. Fish & Wildlife Service
Ron Bliesner	U.S. Bureau of Indian Affairs
Tom Chart	U.S. Bureau of Reclamation
Paul Holden	Jicarilla Apache Nation
Vince LaMarra	Navajo Nation
Bill Miller	Southern Ute Indian Tribe
Tom Nesler	State of Colorado
Frank Pfeifer	U.S. Fish & Wildlife Service
Dave Propst	State of New Mexico
Tom Wesche	Water Development Interests
Others Present:	
Rob Ashman	Public Service Company of NM
Clare Berners	New Mexico Interstate Stream Comm.
Mike Buntjer	U.S. Fish & Wildlife Service
Jason Davis	U.S. Fish & Wildlife Service
Steve Harris	Water Development Interests
Amber Hobbes	New Mexico Dept. of Game & Fish
Julie Jackson	Utah Division of Wildlife Resources
Chuck McAda	U.S. Fish & Wildlife Service
Steve McCall	U.S. Bureau of Reclamation
Pat Page	U.S. Bureau of Reclamation
John Pitlick	Biology Committee Peer Reviewer
Steve Platania	University of New Mexico
Steve Ross	Biology Committee Peer Reviewer
Dale Ryden	U.S. Fish & Wildlife Service
Ron Ryel	Biology Committee Peer Reviewer
Ernie Teller	U.S. Bureau of Indian Affairs
Manuel Ulibarri	U.S. Fish & Wildlife Service
Ed Warner	U.S. Bureau of Reclamation
Marc Wethington	New Mexico Dept. of Game & Fish
Shirley Mondy, Program Coordinator	U.S. Fish & Wildlife Service
Marilyn Greenberg, Program Assistant	U.S. Fish & Wildlife Service

Introductions, Agenda Revisions
The attendees introduced themselves, and the agenda was approved as is.

Long Range Plan Revision
The Biology Committee was asked to review and discuss the Table 5.1 revisions and format of the Long Range Plan (LRP), looking at how the table tasks and time lines could or should be made more specific. Are more specifics needed regarding the native fish community and the Program Evaluation Report (PER) on page 3, Sections 2.0 and 2.1? This LRP has been adapted to reflect the concerns of the Coordination Committee. The Hydrology Committee functions will be incorporated before the LRP comes back to the Biology Committee for approval.

With future work, should the Biology Committee announce new project starts in Commerce Business Daily to make this process more competitive and? The Upper Basin does not identify who is going to do the work, status, or suggested completion date (unless it is already ongoing funded work); they only identify the project and the status. The Biology Committee decided to not address new starts and ***Jim Brooks will not add a "who" column to Table 5.1. Table 5.1 will be split up to add details and identify who is responsible. This will be modified and comments are due to Jim Brooks by March 19.*** Jim will work with Pat Page and the Hydrology Committee to finalize. Vince LaMarra and Bill Miller will elaborate on the specifics of Sections 1.1 and 1.2.

For Section 2.0, it was suggested that examples be added; e.g., the roundtail chub may have been part of the pikeminnow food chain.

For Section 2.1, it was suggested that the background of the LRP is not just the PER as is implied here. It is important to identify that this revision of the LRP is a compilation of comments from the Coordination Committee and a consequence of the identified need to revise the LRP to reflect new information.

This section also needs added background and history, and to indicate that it was originally agreed to revise the PER and the LRP periodically. When this LRP was developed in 1995, it was anticipated that it would be updated upon completion of the 7 year research program. The PER is a Biology Committee product. The LRP is a Program document. The Program Evaluation Report Disclaimer (from November 2, 2001 Coordination Committee Meeting) states: "The September 2000 Program Evaluation Report for the 7-year Research Period of the San Juan River Basin Recovery Implementation Program was prepared by the Program's Biology Committee. This report is intended to provide information and recommendations to the Coordination Committee. The report is not intended to change, nor does it change, any Program policies or goals."

Draft Genetics Management Plan
It was suggested that pikeminnow and razorbacks should not be pulled out of the river for genetics work because they are so rare. Another question that was raised was: Is there genetic material in wild that we do not have in captivity? Others

responded that there is no indication that there are distinct stocks in different rivers. It appears that the San Juan River represents a subset of everything that is out there. There is nothing in the San Juan that is not elsewhere.

It was suggested that on page 12, and elsewhere, the PER can be cited - where it says there are not enough pikeminnow in the river.

When the Genetics Management Plan (GMP) is updated with the above revisions, final copies will be sent out to the Biology Committee at the same time that it is sent out to the Coordination Committee. ***The updated GMP will be placed on the website when the internet becomes available.***

This is a document that we are giving to the Coordination Committee as a recommendation. Their approval is not required. The Coordination Committee may have comments on the final draft.

The Biology Committee agreed to use local stock, or nearest neighbor, fish spawned out of the river if possible. Dale Ryden will remove any conflicting information on page 35 of the GMP.

The Biology Committee agreed that wild razorback would be brought in, spawned, and put back in the river. The pikeminnow and the razorback sucker are generally difficult to capture. The recommendation of the Biology Committee, at this time, is that Box 10b should be removed.

The Biology Committee is asked to get all comments to Dale Ryden by March 19. This document will be sent out to the Committee for review prior to finalizing it for the Coordination Committee.

On page 31 and page 36, item 4, it was suggested that survival and recruitment are different issues than genetics management. The Biology Committee agreed to remove that verbiage. Item 3 should be stated "monitor genetic status" instead of "population". Item 3a is appropriate for the razorback sucker, but not for the pikeminnow.

The Upper Basin does not monitor captive stocks. After adult populations become established, then it is appropriate to conduct genetics monitoring. There is no good reason to monitor the fish that are being reared, but it is good to monitor the fish that are being stocked for documented reproduction and recruitment for 5 -10 years down the road. Genetics could be periodically re-examined. If genetics monitoring is done and something is found, what would be done? Is hybridization an issue? How much hybridization is too much? ***Suggestions for wording would be appreciated by Dale Ryden.***

Draft Pikeminnow Augmentation Plan

This plan went out in the beginning of January, 2002. Dale Ryden took the ideas of the original stocking plan and worked in information from the population goals

meeting held in December. This plan was written to reflect the survival curves used by Tom Nesler and others in the recovery goals.

This plan tried to lay out how the fish that are stocked would relate to how many fish will remain later. Another option is to hold fish until age 3. Then the same recovery goal might be achieved with less fish.

If we went above the 200,000 fish currently planned for stocking, it would help a lot. This would have to be based on what Dexter could produce, but would help with years where there is higher mortality.

The table that Paul Holden passed out (Utah) shows that 1996 and 1997 were very successful stocks. Was that because the stocks were later in the fall and were bigger fish?

There are few fish in the river that are 200 - 300 millimeters. Do they grow fast or do they have a higher mortality? The data says this stocking was a success. More 200- 300 millimeter fish were observed than ever seen before, or since. Can what is going on from different stocks be tracked? We cannot stock for 8 years and have the same success every year. Should more than 200,000 fish be stocked to compensate for less successful years? Viability and mortality do not appear to be related to how many fish are stocked. Certain years we get more recruitment than others. 200,000 seems like a good number to start with. There were concerns by some Committee members about overstocking. Not enough is known to say "this" is what is going to happen (with these survival curves).

The Committee needs to select one option to go forward with. New information that arises as we evaluate the stocking will dictate the changes that are needed. What facilities are needed to supply 200,000 fish each year at a certain time? It was suggested that the Committee look at what goes on with stocking 200,000 YOY and see what happens when they get to 300 millimeters.

Colorado has been stocking 150 millimeter, age 3, fish. Is there any justification for stocking 200,000, age zero, fish? Stocking 150 millimeter fish is not an option at this time. The facilities are not available. Some feel that smaller fish have not been as successful, and do not want to see bigger fish options dismissed just because of current lack of facilities. They think we will get better success with larger fish. There was a suggestion that the Committee pick an option and then figure out the resources to get us there. Determine the variety of ages to be represented to equal the target goal of 5800 razorback in the San Juan?

Option 2: Use a 15% buffer for years of poor survival. There was a suggestion to go with one survival rate and not have a buffer, because a buffer is built into the survival rates. and evaluate later. This option is consistent with what happened in the Upper Basin. Stocking was spread over 3 age spans. It was determined how many eggs were needed and how much survival would occur at each age.

Page 38 shows a table of survival curves that does not include a buffer. Does the committee agree with these survival curves? Let's look at why the fish don't survive, rather than just say let's stock bigger fish. Then ask, "What do we have to do to make sure the fish survive to adulthood?"

Monitoring of these fish would become a separate Scope of Work. This is an adaptive plan, that can be modified later. It is too difficult to include monitoring in this augmentation plan. These numbers are subject to change based on the monitoring plan. It will take time to verify whether our estimates of survival are accurate.

Previous years' research from the San Juan was used. From the time the fish were stocked to the time they were recaptured is a black hole - no one knows what happened in that time period. The recovery goals are based on ages. If we use sizes, we need to link it to ages. The San Juan may have a different age to size structure ratio than other habitats. A monitoring system needs to be used.

Add: this plan will be reviewed within 2 - 3 years in light of the information that has been gathered in ongoing monitoring. Keep all options available, but not all in this document. Leave out the words downlisting and de-listing. We can say that we have certain recovery goals. Jim Brooks will document what the available space is for each age group at the facilities.

Page 61 Monitoring schedule:
Until we put fish in the river and start to see them reach age 5 - 7, we do not need to ***go to a more rigorous 3 paths type of monitoring. That should be in the monitoring plan, not this plan. Put it in a new scope of work - this is how we are going to monitor these populations. Do not put monitoring in this document. More information on stocking protocol is suggested, explaining how it is done.*** Do not stock above Hogback unless it is for experimental purposes. Make lower sites the priorities, and other sites more experimental.

Scope of Work: research augmentation above Hogback on fish lost due to the diversions. Upstream stocking is guaranteed to impact losses. Food is in the area above Hogback. We have almost lost backwater habit in reach 3, the bulk is in reach 5. ***The Committee recommends stocking half below Fruitland and half below Hogback*.**

Draft Razorback Sucker Augmentation Plan Addendum
This is an attempt to bring the augmentation plan in line with population goal numbers and population curves. More fish will have to be stocked than expected with the original (i.e., 1997) stocking plan using these new survival curves. For the desired return on larval fish, how much pond space (acreage) is needed? Decide on a desired number of fish, then decide on whether the survival curves are appropriate. Then work backwards to determine what the target to stock would be.

(Page 2) Are pond raised fish sexually mature at age 3-4? Lake Mead has fish that are 5 - 6 years old and are not mature. The male pond fish are mature at age 4. Perhaps not the females. How should adulthood be determined - when the males are mature, or when all fish are mature? Females need to be older to be mature.

Dale Ryden will redo monitoring section - per comments on the pikeminnow plan - and take out examples.

Some members do not believe that the goal of 5800 adult fish in the river can be met with the numbers from the last drafts. What if a 15% buffer is added? Will wild fish fill in behind stocked fish? The food resource is there, but it may have to be shunted away from flannelmouth or channel catfish.

(Page 12, table 4) It has been shown that when the percent of buffer is increased, this does not decrease the number of years to stock. There is a buffer inherent in the survival curve, a buffer does not need to be built in. It was suggested to use best information that we have regarding survival rates, and plan to meet or exceed 5800 fish. Go with Option 1 (without a buffer). Do not add more fish than is sustainable in the river. Recovery goal can be met if resources can be shifted.

Take the production of captive-raised fish section out. Stock ponds at NIIP with fish from Mumma fish hatchery or other ponds. A production plan would be needed to document further construction of ponds. There are about 25 acres of surface area available now.

Some sort of propagation and facilities operation plan would be good to add to the LRP for planning for next year. Is 1.69 million larvae from Mojave a reasonable expectation? Fertilizing the ponds to increase productivity might be an option to jumpstart fish growth.

Please get any further comments to Dale Ryden by March 19.
Dale will try to get all of the plans finalized by the first part of June.

Roundtail Chub SOW Discussion
The Coordination Committee requested that a tighter link be made to roundtail chub in the basin to recovery of pikeminnow in the basin. Section 6 funding has been obtained outside of the Program for this. There has been some thought given to using stable isotopes and cultured fish to look at the predation of roundtail chub by pikeminnow. ***The entire background has to be redone***, and the Coordination Committee is only willing to look at funding this ***as a research proposal***. ***This has to be worded as a pikeminnow proposal***, not as a chub proposal. The case has to be made that providing a forage base is essential to restoring pikeminnow. Can these be linked to the successful recovery of the pikeminnow? It would be good long term planning to do this study.

Frank Pfeifer will assist Dave Propst in rewriting this with a different background/focus. The new proposal must be approved by the Biology

Committee before it is resubmitted to the Coordination Committee. The Biology Committee agreed today to approve it. ***Dave will repackage this by March 19 and send it out to the listserve.***

Discussion on the Role of the Peer Review Panel

The memo that Tom Wesche sent out was requested by the Water Development Steering Committee to better understand the peer review process, and peer reviewers can read it to clarify their role within the Biology Committee. Does the Biology Committee agree to the wording of this document? The Biology Committee agreed that it was good documentation for the Biology Committee, and that it may be helpful clarification for the Coordination Committee, as well.

A written report from the peer reviewers will be very important to the Coordination Committee. There have been no comments back from the Coordination Committee regarding the final peer review selection criteria. ***The Biology Committee will discuss this memo and the Committee's expectations with the Peer Review Panel, and upon their agreement, this document will be finalized as a Biology Committee document and shared with the Coordination Committee.***

Wednesday, February 20

Opening Discussion with Peer Review Panel
Jim Brooks introduced the Biology Committee Peer Review Panel:
Dr. Ron Ryel (returning member)is a bio-statistician at Utah State University, and is a private consultant; Dr. David Galat (returning member) is a fisheries ecologist at the University of Missouri; Dr. Steven Ross (new member) is a fisheries ecologist (marine and freshwater, as well as roundtail chub) at the University of Southern Mississippi; and Dr. John Pitlik (new member) is a geomorphologist/hydrologist at the University of Colorado and has done a lot of work on the Colorado River.

Using Tom Wesche's Peer Review Panel memo as a starting point, the Committee discussed the role of the peer review panel and how and what they contribute to the Biology Committee specifically and to the SJRIP in general. In August or September, the Committee anticipates having the final report completed, with Bill Miller taking the lead. The peer reviewers will have quite a bit of input on the 3 years of monitoring reflected in the individual reports as well as overview in the final compilation of the report. The Committee would like a formal work product from the peer reviewers, such as a letter/report of their comments regarding the Committee's work and reports, in addition to their ongoing verbal comments and guidance on the use and interpretation of our statistics and data. Today the peer reviewers, along with the Biology Committee, will hear presentations and reports from the last 3 years.

Individual Researcher Presentations:

Adult/Juvenile Fish Community and Discussion

Dale Ryden has been the lead for main stem sampling. In 1996 - 1998, numbers of native suckers declined river wide. Those CPUE numbers have gone back up over the last three years of river wide monitoring.

Reach 6 (RM 180.0 - 158.6), Animas - Hogback, is important to native fishes. However, this section of river is more important for bluehead than for flannelmouth sucker. In 2000, there was a marked influx of young native suckers (both flannelmouth and bluehead) in Reach 6, especially upstream of PNM Weir.

In the early 90's the proportion of flannelmouth sucker in Reach 1, adjacent to Lake Powell, was greater than in the late nineties. This is probably due to the river reconnecting with Lake Powell in 1995, which led to the invasion of striped bass and other lacustrine predators. The lack of young flannelmouth sucker in Reach 1 may also be tied to poor habitat conditions for this species in this river reach.

From 1991 - 1998, electrofishing samples were done every mile. Now 2 out of every 3 miles are being sampled. There has been very little difference in catch rates documented with sampling 2 out of every 3 miles as opposed to every mile. Over the last eight years, numbers of adult native suckers have not fluctuated that

much on a river wide basis - about 50% of the population for blueheads and about the same for flannelmouth are adults. 1999 - 2001 was the only period when adult/large-bodied fish community sampling was performed continuously from the Animas River confluence all the way down to Lake Powell on the same fall monitoring trip.

The late 80's and early 90's were a drought period. Ron Bliesner added data about yearly releases:

91 Was a control year. There was no peak release. The dam was operated normally.
92 There was a moderate release.
*93 773,000 acre feet was released. This was the largest spring release.
94 Like 1992 - average; moderate release.
*95 Was just a little less than 1993.
96 Was the lowest release
*97 Was a peak year - above 10,000 release
98 Was lower than 1994 and 1992.
99 Was half of what 1998 was.
2000 Was the driest year since 1996.

1997 was the last 10,000 cfs flow in accordance with the flow recommendations. 1995 showed the most channel change. In the summer of 1999 there was a long release out of the dam. That was also a very wet year. There were not many spikes, and there was a fairly regular flow out of the dam.

In 1999 - 2001, large numbers of small channel catfish were collected. Channel catfish numbers are increasing. When electrofishing started, very large channel catfish were common in the San Juan River, especially in Reach 6 downstream of PNM Weir (above PNM there are very few channel catfish). Now, even though CPUE numbers for channel catfish are up over previous years, the mean TL of the fish is much smaller. The extremely larger channel catfish are no longer as common as they were.

Common carp abundance has fluctuated slightly through the years. Control efforts appear to have been largely unsuccessful, and carp represent an enormous amount of biomass. If numbers of carp in the San Juan River could actually be reduced, it would make available a large amount of resources for native fish.

There was a dramatic influx of adult striped bass from Lake Powell in the summer of 2000. In all, 379 striped bass were collected in 2000 (9 in May 2000; 279 in summer 2000; and 109 in October 2000). These stripers made it as far upstream as PNM Weir in large numbers. Most of the striped

bass collected that summer had full stomachs, many of which contained native flannelmouth sucker. Turbid flows seem to be a key factor in preventing large numbers of striped bass from remaining in the San Juan River once they invade. If they do stay in the river, they tend to get very skinny, likely because they are a sight feeder and need clear water conditions to hunt effectively.

2001 data show a decline in CPUE for both flannelmouth and bluehead sucker from 2000 values. Dave Propst suggested that Dale should do an analysis between CPUE and discharge. Turbidity should also be looked at - from 2 monitors - Shiprock and Montezuma Creek (get data from Ron Bliesner). 2001 had elevated turbidity all summer long, kept transporting sediment down the river all summer long. Did this affect sampling efficiency? Turbidity changes the productivity of the system; light doesn't get through which affects the plant food supply. Turbidity is more likely to effect efficiency than flows. Flows have not varied that much. 2001 flows were 1000 - 1500 and it was really clear. Dale may need to do regressions against flow and turbidity. In 2000, turbidity units were less than 100. In 2001, the turbidity units were around 1500.

The adult fish community monitoring data as it was presented to the Biology Committee at this meeting should be acknowledged as being "raw data." This data needs to be looked with other variables, such as population size structure, in order for it to tell us more. However, looking at this raw data is an opportunity for everyone to generate some ideas about what this might mean, rather than one person consolidating it and having some ideas be overlooked.

YOY/Small Bodied Fish Monitoring and Discussion

Secondary Channels

Dave Propst reported that Reach 3 has the greatest, and Reach 5 has the least, amount of secondary channels to provide habitat. In the early 90's we started looking at secondary channels. During spring runoffs most of secondary channels can be flooded. Some become completely dry in the summer. The secondary channels provide low velocity habitats to a large number of small bodied non-native fishes. These secondary channels have not been sampled in autumn.

These tables do not include 2000 or 2001 data. 2000 was a banner year for red shiner and fat head minnow in secondary channels. Dave Propst has been looking at different species' reaction to different flow regimes. The incidence of flannelmouth and blueheads is higher when there are higher amounts of spring discharge. Spring runoff has no effect on fishes in secondary channels. Lower flows in the summer have a positive effect (low significance so far) on the density of

native and nonnative fishes.

2000 was a real anomaly; the native fish numbers (esp. red shiner) were very high. 1999 was a high flow year and knocked the red shiners back significantly. But they can reproduce very well in the right conditions. In 1998 - 1999, the natives increased dramatically. 2000 was a good year in the primary channel for native fishes. There were more native fishes in the primary channels.

In 1999, native fishes declined in every reach. Only 18 channels were sampled, instead of the normal amount because flows were so high.

It was suggested that it might be a good idea to look into available habitat (in secondary channels) compared to total numbers of fish. From one year to the next, there is generally not a big difference in available habitat, except in 1999 when more water created more habitat in secondary channels. Small bodied fish do not get out where the water velocity is high.

Density estimates are a good method for monitoring, but they represent the incidence of abundance and underestimate the numbers because it is amazing how many fish you can catch on the 3rd or 6th pass of an area that is blocked off. After 80 passes you might still be catching fish. 5 - 10 samples are done in each secondary channel. The variation is probably huge. Standard error should be relatively small.

There has been a steady decline in natives since 1993 in the secondary reaches. The decline for non-natives has been since 1996, which was a low flow year. Non-natives peaked in 1995.

Dr. Ross commented that smaller fishes have generation times of 5 - 10 years, and may not be found in electro fishing for 2 or more years. The lag response may be different for different species. We cannot just look at hydrologic conditions for that year.

There is habitat information available , but not velocity data, to compare with the sampling/monitoring data. Is there a correlation with flow and the amount of habitat in secondary channels? As flows increase, habitat diversity goes down. Can we compare this to density?

In 2000, Dave Propst processed more fish than in all the previous years combined. In a normal year 4000-5000 specimens would be processed. About 60,000 specimens were processed in 2000. *Dave Propst will complete the 2001 collection review by May 1, 2002.*

Larval Razorback Sucker and Colorado Pikeminnow Studies and Discussion

Steve Platania explained that the purpose of this study was to catch larval razorback sucker. In 1997, they tried to follow what the Upper Basin had done with

razorback sucker - light trapping to monitor reproductive efforts. This was not so effective for us, yet. In 1998, 2 razorback sucker were caught, and there had been none prior to that. In 1999, 7 razorback were caught in an extended area. In 2000, 138 were caught, most at rivermile 8.1. Some were found at mile 126 (Four Corners). There has been an increase in number of razorback sucker that are being caught. Mile 100.2 is a suspected spawning area. Platania proposed to stop drift netting, and instead will use seining to look for pikeminnow, as is done for razorback larvae.

This is the first report to deal with razorback sucker larval information. We are sampling everything, focusing on local habitats. We have still been taking light traps with us in case a situation allows - like a big backwater at end of the day. About 15 were caught once that way. We also do some drift netting, not so much for razorback sucker, more for pikeminnow, starting in July - at Mexican Hat RM 55 or 58, and the Four corners site RM 198. From first of July to end of August, there are usually 3 - two hour sets, generally starting with a 2 two hour set early in the morning. There is not much information about pikeminnow coming out of this, as we are not seeing pikeminnow in the samples.

More young of year (YOY) pikeminnnow were collected after the stocking efforts. The sampling efficiency was tested to be fine. We may need to redefine what our purpose is. Is our focus to monitor reproductive effort? This is an effective method for monitoring. We really need to spend more time figuring out whether pikeminnow are spawning out there. Should monitoring be continued through the summer? Is there a better way to get at the question of the presence or absence of pikeminnow?

Drift sampling is usually an effective means to monitor reproductive effort. The amount of debris in the river means that it is not effective anymore. Pikeminnow larvae have not been found in 5 years. There has been stocking in the last 5 years, so it is not clear if wild or stocked fish are being caught when catching young of year fish.

Pikeminnow that were stocked in 1996 will be mature - age 7 - this year (2002). This is the year that they would likely start spawning. Larval pikeminnow are not being stocked this year, so this would be the year to look for larval fish.

Drift nets could catch an earlier life stage. If we were catching pikeminnow, we could try to back calculate the spawning dates. Dawn, dusk, midnight, and noon samples were being done back in the 80s. At Four Corners, we sampled at dawn and dusk for one year, at one site, and found no difference in the sampling. There is a spawning bar upstream of Four Corners. It is suspected that there is a closer spawning area, possibly at Mexican Hat. Dawn seems to be the best time to do drift netting because the fish have drifted overnight. With high turbidity, the fish may drift anytime because it is dark.

Website for larval fish studies, maps, etc.:
http://msb-fish.UNM.edu/website/SJR_test/index.htm

Per Steve Platania's suggestion, the Biology Committee agreed to send a revised Scope of Work to the Coordination Committee, with an endorsement from the Biology Committee. The document needs to note that this is a modification of the monitoring plan.

Nonnative Species Control and Discussion

Utah (Julie Jackson) is planning 10 non-native fish removal trips beginning mid-March. Stomach searches will be done.

New Mexico USFWS (Jason Davis) explained the process of data collection and mechanical removal of non-native species during monitoring efforts. The distribution and abundance of catfish, common carp, and striped bass are characterized, and the predative impacts of striped bass are determined via stomach contents analysis.

The entire San Juan is monitored, particularly PNM Weir to the Hogback diversion (very few catfish are found above the diversion), to determine whether mechanical removal is working. Past research indicates that electro fishing is the best method of collecting fish.

In 3 days, in 1999, 500 catfish and 1500 carp were collected. In 2000, for 3 days, 1800 catfish and 955 carp were collected. A significant decrease ($p<0.05$) in the mean total length was noted from 1999 to 2000. There were fewer larger fish collected in 2000.

In 2001, New Mexico made 10 trips from February - November, which included 178 hours of electro fishing, and removed 4,024 catfish and 3,074 common carp.

The highest catch rates occurred when discharge was less than 900 cfs. There was a significant negative correlation; however no significant regression trend was observed between discharge and capture rate. There may be other factors contributing to the efficiency of this data like turbidity or water temperature. Most of the monitoring efforts have been focused on prespawning times to, in theory, reduce reproductive potential. It may be desirable to shift the monitoring effort to the fall, when flow conditions and warmer water temperatures are more ideal for collection.

In 2001, smaller fish were still being collected. 55% of the fish collected in 2001 were less than 400 mm. Only 14.7% were greater than 500mm in length.

There were no YOY catfish collected in 2001, or in other years, except downstream. Below Hogback there were lots of catfish, but not near or above PNM Weir. We may be accomplishing the goal of eliminating larger catfish. Captured carp range

from 72 - 650 mm. From 1999 - 2001, no significant decrease was shown in mean total length for carp.

Striped bass were not collected between PNM Weir and Hogback in 2001. There were brown trout, large mouth bass, and black bullheads, which are all nonnatives, but only a few were caught each trip.

The researchers want to continue to look at sexually mature catfish length and reproductive age. This may vary in different bodies of water. Getting rid of fish above the reproductive age is a goal. What is the best time of year for removal efforts? How long should removal efforts continue once target catch rates are achieved? The researchers are currently working discreet stretches of the river that are bounded by diversion structures. Once these are clear, removal can move downstream. Success indicators are smaller fish, increased mortality, and decreased yield (a narrow range of age groups and a high dependence on single year classes) for nonnatives.

Estimates to see if total biomass has been reduced have not been done yet. May need to look at what is going on with the other fish, in relation to the carp and catfish.

The 2003 work plan should include 10 trips. The emphasis should be split between the spring and the fall to concentrate on the times of the year when we can have the most effect. Some fish are being tagged below Hogback to assess whether Hogback is providing upstream access. The fish ladder may be providing access for the nonnatives. Water temperature, turbidity, and other water quality parameters will be measured to determine the effects they may have on collection.

Razorback Sucker and Colorado Pikeminnow Augmentation and Discussion

Razorback sucker

Dale Ryden stated that razorback sucker augmentation was begun in 1994. The number of fish stocked in river hasn't been what they wanted. A total of 6,836 razorback sucker were stocked between 1994 and 2001. CPUE is shown because of positive population response criteria. Last year was good because efforts were good in spring, summer, and fall trips. There are still not a lot of fish out there, but it is much better than it used to be.

In 1997 , an aggregation of 3 ripe males were collected near Aneth (3 other razorback sucker were also observed at the same site, but could not be successfully netted). In 1999, 2 ripe males and 1 ripe female were caught at this same site. In 2001, three radio-tagged razorback sucker were contacted right next to each other at this same site. When an attempt was made to recapture these radio-tagged fish with a trammel net, a fourth razorback sucker (not radio-tagged) was collected. From the bank, this area

doesn't look like anything special, but it is just downstream of the mouth of McElmo Creek and on the same side of the river. McElmo Creek water has not completely mixed with the water from the river's main channel by the time it reaches the spawning area, along the river right shoreline. The water along this river right shoreline often has a higher salinity and conductivity and is slightly warmer than adjacent main channel water. This area is about 20 miles upstream of where the historic collections of razorback sucker near Bluff, Utah occurred. Fish from many different stockings (i.e., stocked in different years and at different stocking locations, both up- and downstream of this site) have been collected at this site in several different years.

We have observed good growth among razorback sucker in the Avocet ponds - after 3 years there are even some ripe males. It looks like the numbers will be good for stocking. The fish can occasionally be observed from the bank in the cattails, etc. Fish stocked from the Avocet ponds in 2001 were all > 300 mm TL. We can obtain very good growth on these fish if they are left in the ponds for at least 2 or growing seasons. At two growing seasons, the peak harvest yield is about 1% of the larvae that were originally stocked into the pond. It was suggested that we may need to put more fish in the ponds or fertilize to help with growth. Fertilization would help the growth, but not necessarily the survival. However, fertilization may help them to survive if they get enough growth earlier on in their first season.

Sources of fish available for stocking the grow-out ponds in spring 2002 include the 24-Road hatchery in Grand Junction, the State of Colorado's Mumma fish hatchery, and larvae obtained from Lake Mohave (to be reared by UNM). Quent Bradwish has some fish available from the golf course ponds in Page, Arizona. He will harvest the fish within the next few weeks. Fish > 300 mm TL will be transported to and stocked in the San Juan River. If there are many smaller than that, they may need to be put in the grow-out ponds for another year. Some still need to be pit tagged. The fish are delivery is in April. In the past it was preferred to deliver fish in May when the water is a little warmer. They may need to go into the new ponds, but that may not be productive since the new ponds were not filled until October. The ponds could be fertilized with alfalfa hay or pellets (easier to distribute and they break down easier than the hay itself). Each pond is 3 acres in size, and 8 feet deep on the deep end.

Steve Ross asked about genetic diversity? No one has looked at the fish that have already been harvested from the grow-out ponds to see what genetic line they represent. Ross suggested there could be genetic-based mortality taking place in the ponds and that all the fish being harvested are coming from one genetic source. Dale Ryden said this has not been an issue in the past because the fish in the ponds basically came from the same source

already.

The question was raised as to whether stocked fish are being acclimated (e.g., being held in an isolated backwater for the first 24 - 48 hours after harvest) before stocking to get better survival, the response was "that it is a manpower issue" and is not always possible. A suitable acclimation site would have to be found to stock the fish in (backwater as opposed to running area) if smaller fish were stocked. Right now the fish are being stocked at Hogback to give them a chance to acclimate to the current and to maximize their chances of retaining in the river before they get to Lake Powell. If fish are stocked in a run, some people had fears that they would be lost due to large initial downstream displacements. It is best to use the fattest fish possible and to go as late in the year as possible, that way the fish can afford to lose 25% of their body weight while they are figuring out what is going on.

Dale asked the question about the committee's thoughts on stocking both larger (i.e., 6 inch fish) and larval fish into the same pond? Up to 10,000 larvae can be added per new pond. Would it elevate the mortality of the larvae to also stock larger razorbacks in that pond? The consensus was that if there is space, don't double them up. Jim Brooks put in a request for 150K larvae and Manual Ulibarri has committed to a minimum of 50K, and another 100K from Dexter is possible. Lake Mohave is not being utilized as a source for larval razorback sucker at this point.

Pikeminnow

A fair number of pikeminnow (i.e., adult fish stocked on 11 April 2001) are showing up on channel catfish removal trips between PNM and Hogback. They seem pretty thin and have not grown much in length. Based on some young pikeminnow collected by Dave Propst, some larval pikeminnow are surviving from the last couple of stockings (see below).

148 pikeminnow were stocked in April 2001. One fish was recaptured twice. There were 17 total recaptures. There were a lot of recaptures between PNM and Hogback. As of this meeting, there were two radio-tagged pikeminnow remaining upstream of PNM Weir; one is probably dead, one is questionable. One has been confirmed above Hogback. This is the farthest upstream a stocked radio-tagged fish (confirmed alive) still remains in the system. There are three radio-tagged pikeminnow around an island complex at about RM 145.5. One radio-tagged fish was contacted below the Four Corners bridge. Jason Davis' sampling (between PNM and Hogback) has accounted for the large majority of the electrofishing recaptures.

The recapture of Colorado pikeminnow, stocked by UDWR between 1996 and

2000, peaked in 1998. Last year, four were recaptured; a couple were in the 300-400 mm TL range, and a couple were 150 mm TL range. A couple of different age classes were represented by these four recaptures. In 2000, Dave Propst caught some that were in the 90 -100 mm ranges, probably from the year when only 10,000 larval fish were stocked.

There was a question about overloading an area with a lot of young fish when stocking in the river? Utah's stocking showed good upstream movement and good dispersion. 200,000 fish should not all be dumped in one spot. Since the maximum suitability is not known, it would be good to stock several areas, and to plan to start stocking pretty high in the system.
50,000 fish were stocked in two locations last year, and within 2 weeks they were spread out already. Some of the fish may be 55 -75 mm. Put them higher in the system. Select 4 or 5 places per mile? Or stock 20,000 fish in 10 locations spread out. It was suggested that fish be stocked half above and half below Hogback, and release them in a suitable habitat, rather than in the main channel.

The Committee discussed recommendations for the 8 year stocking plan. The eight year stocking plan with buffers is what Dale proposed. The buffers are what are different. Is a little study needed to figure out what would be needed to deliver pikeminnow in future if the 200,000 doesn't really work? How and when would it be determined whether it works or not? A study of what facilities are needed and what size is the best to stock is really the study that is needed. We need to be ready to expand facilities to handle needs in the future.

Should 200,000 55mm fish be stocked for 2002, based on what Dexter said they could provide? Are we going to clear out what Dexter has every year, or let the fish grow and take them out every other year? Why are we limiting ourselves right now to what we have this year? What facilities options are available for 2003 and 2004? What facilities will it take to provide 150 mm - 300 mm fish? The Upper Basin opted to stock 150mm size fish because that was the smallest size that could be PIT tagged, since they had a lot of wild fish already. It was not based on survivability or anything else. We could plan based on about 800 adults for 10 years, with a higher number per year for a buffer. Would there be a problem with carrying capacity if 200,000 were stocked? Did stocking 100,000 strain the carrying capacity? Is it efficient, effective, and the fastest way to get to the recovery goals? In order to grow and stock larger fish we must plan 2 years in advance.

What is the best size fish to stock? 55mm fish seem to have the best odds of surviving, based on what we know so far. It was suggested that our facilities be expanded and plan to accommodate alternatives, depending on what happens in each year. Is the Committee opposed to putting in more than 200,000 this year? Paul Holden considers this still experimental and it is ok to put in more. The Committee agrees that the minimum number is 200,000 fish with a range of 200-350k. The target would be 350K. The source would be the 1991 year class.

It was suggested that the Committee experiment with 100,000, 200,000, or even 350,000 fish. ***The Committee agreed that if space can be obtained to accommodate another 152,000 fish, do it.*** Since 400mm male fish are sexually mature, wouldn't releasing that size fish increase the odds of survival and reproduction? ***The Biology Committee agreed to stock a minimum of 200,000 fish in the range of 200 - 350 mm. Frank Pfeifer will look into additional rearing facilities that may open up, and the costs associated with them. Jim Brooks and Frank Pfeifer will work with Manual Ulibarri at Dexter to come up with facilities that will be used to provide the 200,000 and/or 350,000 Colorado pikeminnow. Jim Brooks will also work on the pond needs for the razorback sucker. In coordination with Manual Ulibarri, Jim Brooks and Manuel Ulibarri will describe the facility requirements for 200,000 and 352,000 fish. Dale will generate 2 tables that identify stocking needs.***

A Scope of Work for razorback sucker propagation for 2003 will be needed, including grow out facilities.

Criteria to evaluate private ponds will need to be developed. Jim Brooks and Jason Davis agreed to take the lead on evaluating these ponds. Frank Pfeifer will pass the existing pond criteria on to Jim and Jason.

Does the Committee want to actively seek ponds, in order to obtain 9 more surface acres? 500 pounds of fish per acre is now recommended, so 36 acres will be needed and we have 25 acres. Jim Brooks will sit down with Manuel Ulibarri and look at the options and space available for razorback. Jim will come back to the Biology Committee with a recommendation after he gets this information.

Habitat-Related Studies and Discussion
led by Ron Bliesner and Vince LaMarra

Habitat distributions for 2000:

runs	83.56%
backwater and embayment	.24%
inundated veg	.24
low velocity	1.34
riffle types	7.35
shoal types	5.98
slackwaters	1.28%

Backwater areas went down from 0.33 percent in 1999. 1995 was the best year for backwater habitat (the largest quantity was in reach 3 at RM 75-100). By 2000, at the mouth of canyon, from reach 2 to reach 3, all major habitat types have been lost. There is an overall lack of complexity and shoal and riffle are more predominant when backwater habitat is lost. Backwater is a basis for complexity. As you get down in the river, the last 17 miles have been dominated by shoals. In the canyon reaches, the slackwater habitats are associated with the riffles. The pools and eddies are further up in the river.

Backwater in square meters per reach: In 1995, there was about 140,000 sq. meters of backwater habitat river wide. Backwater habitat has been lost in reach 3, and it is getting worse in canyon areas and in reach 1. The overall trend follows what is happening in reach 3. This tracks with Dave Propst's data about nonnatives. Maybe another big flow would help restore the backwaters.

The key to cleaning up the back waters is duration of days above 8000 cfs. This has not happened since 1995, even with flows over 5000. The secondary channels are now a riverine environment or high and dry. Since 1995, there has been a 10% reduction in wetted area; a 7% reduction in runs; a 60% reduction in low velocity habitats, and a 75% reduction in slackwaters. Researchers need to go into the reaches year by year and see what habitat has been lost. It is not known what the backwater habitat turned into. It seems to be turning into riverine habitats. Bed elevation was lowest in 1995. Those overbank flows are needed to maintain habitats. Reach 5 and 6 have stayed relatively the same.

The lower reaches need to be cleaned out last or they will end up with sand berms and no flow. The sandbars are only shoals, not really sandbars that would create backwater habitat.

The backwater count that has been mapped is the same for 2001 as for 2000. In 1995, the count jumped up and there were more little habitats, mainly in Reach 3. In 1995 there was basically the same amount of area as in 1993, but the count is different. Maybe a bunch of smaller backwaters are more important than 3 big ones?

The depth of sediment was lowest in 1995. Since then, the backwaters have been filling up. The summer storms of 1995 may be when it all started filling in, and the habitats never recovered. In 1995, they were really clean and then the summer storms came in September and everything filled back up. Fish normally move out of backwaters in the late fall anyway, after being stocked or spawning in the spring.

In 2001, the flows barely got past 8,000cfs. A dirty storm around August brought a lot of sediment and turbidity. The flow in 1997 (with a fair amount of days above 8000 cfs) was not enough to reset the backwater habitats. The 10,000 cfs criteria was also met. There was lots of lower basin flow and hardly any from the dam. There was also lots of sediment from the storms. The flows exceeded 8000 cfs in July, 2001, right around pikeminnow spawning time, and turbidity extended through the rest of year, but it was not enough to reset the backwater habitats. The structure is different now than before 1995. The 2001 release was 265,527 af. In 1995, it was about 675,000 af; in 1994 the release was about 790,000 af.

Flow Statistics:
The 2500 flows have been met every year. These flows clean the cobbles and maintain the spawning bars. The 5000 cfs was missed in some years and the backwaters didn't get flushed. There is supposed to be 21 days of 5,000 cfs; there were 3 days in 2000 and 33 days in 2001. At 8000 cfs the bank is full. 8,000 cfs was last met in 1997. The 10,000 cfs condition has not been met since 1997. There is a 7 year maximum allowed for not meeting the 10,000 cfs condition.

The real test is to see if the river habitat resets again when we get a big flow. This is all pretty much centered around what has **not** happened since 1997. Dave Propst and Dale Ryden's data shows that problems occurred in 1996 and 1997 for not meeting conditions. Is there a change or encroachment of vegetation on sand bars? There has been encroachment of vegetation on bare bars. They will now become more stable, more of an island. If we had done a better job of matching the Animas, we would have gotten 3 - 4 days of 8000 flows and would not have hit bank full, but still wouldn't have met criteria in 2001. Some suggest that given the option, we should go for magnitude versus duration with the flows and releases. Perhaps the model of having a big flow is <u>not</u> benefitting the system? 1996 is when bottom fell out for the natives, and the non-natives increased.

There was a big change between 1995 and 1996. It looks like the bars stabilized in 1996 and that caused the problems. The river should have gotten better and longer benefit from the big flow. There was not a 5000cfs to move the sand out. In 1996, the spring flow was the lowest, and the lowest summer flow as well. 1997 was a perturbated year. If there had been any water in the system, flows would have been increased to flush the system. Sediment seems to be entering the system independent of discharge. Late season storms bring a lot of sediment from high velocity tributaries to the low velocity main stem. It is not fast enough to flush it out of the system, so it deposits onto the river bed.

Everything happened at the same time. Low flow is detrimental, especially if sediment was deposited right before. It looks like this was a critical event that needs to be monitored. This was recognized in the flow recommendations, which is why flushing was recommended after a perturbation year.

Some researchers recommended being cautious about thinking that the sediment being deposited is high. Most of the sediment load moves in the spring (John Pitlick). Turbidity is high, discharge was ok, but carrying capacity is not that great.

Turbidity is high enough to cause deposition. The discharge is not high enough to transport it out of the system, and leaves the sediment on the bank. This can end up leaving a foot of sand on the bar after one of these summer storms.

The relative bed elevation has been in erosional mode since 1992. It almost recovered in the spring of 1999 and then again in the spring of 2001. It was lowest in August 1995 and August 1997. The biggest runoff year caused the biggest channel. The main channel is scouring a tenth of a meter. Deposition is pretty much matching scour, resulting in no significant changes. The river did gain a little cobble in 2001, but that may be an anomaly.
The last 12 mile stretch at Clay Hills is influenced by Lake Powell. Clay Hills deposits increased in 1997 as Lake Powell rose. Then, as the lake started going down, erosion picked back up.

Cobble bars have been located with suspected pikeminnow spawning activity and open interstitial space. The lowest flow year has the best open interstitial space. These fit the signature that the Committee came up with two years ago. Interstitial

space dropped considerably this year when we had a higher flow year. Another bar was built in 2001. The worst year was in 1997. 1999 had the coarsest grain size. The spawning bar at RM 32 has been deteriorating in the last few years. The 2001 mapping data will be final/available in June.

Population Model and Discussion

Bill Miller explained that the model and estimates started in 1998, and are complete up through 2001. The 1999 data set was vandalized.

The Sand Island (Reach 3) biomass chart was used to develop a conceptual model for trophic levels, establish carrying capacities. Reach 3 and Reach 6 are the most reviewed. The total fish biomass was 448 kg/mile in 1998, dropped to 170 in 2000, and went back up to 500 in 2001. This also tracks for numbers of fish as well. 1999 was down from 1998.

Above PNM, the total fish biomass was over 900 kg/mile in 2000. There were lots of little fish and some movements. This is the year when there were huge numbers of fish in that reach. There were 2900 juvenile bluehead (up to 130mm) in 2000. In 2001, there were 1869 juvenile bluehead and 700 flannelmouth. The 2001 data shows fewer juveniles, the adults have increased, and the biomass remains fairly stable. These are the same kinds of things that Dale Ryden is seeing with his data. The first pass nets about 20% of the total population. How does that correlate in each species and each year? This data was obtained by a multipass removal using three rafts per mile and repeated pass removal with electro fishing.

Stella High Performance Systems is a model built by High Performance Systems that provides built-in feedback between adults and flows, egg production, and survival rates. Predation is allowed, as well as interaction between the species (red shiner predation on pikeminnow) and the time of year. It uses a graphical model which shows the linkage between various components in the system. ***It was suggested that a one to one and a half day workshop to go into how the model works with the entire Biology Committee would be beneficial.*** The researchers are finding large difference between the size and age of fish in the literature versus in reality. 300mm suckers have been found that are 8 -10 years old, which is smaller than is indicated in the literature, based on 25-30 of each species reviewed.

The conceptual model has little actual data on native fish. Bill Miller would like to sit down with the Committee and go over each species to fill in data gaps in the model. Food sources need to turn over every year or be rapidly recreated.

Periphyton goes into second-line consumers which ties into species with an entire feedback loop. Once all the parameters are fixed, the population can be estimated. Model runs have been done and the researchers are trying to tweak it so that it matches population assessments from the past 4 years. Then a Biology Committee workshop for the model can be held. Most of the information is coming from literature and field data.

Researchers have found 300 mm suckers that are 8-9 years old, and some older suckers - up to 27 years old. There were 25-30 of each species to age. Don't have a hard class - only one source of data for that and he doesn't know where it's at. Bill and Vince would have a range of age/size.

There is not very much information available on the native fish community. There is lots of info on the endangered fish, but not on the fish that they eat and compete with. The life history of some of these fish is not known. Need something that turns over quickly to support available forage systems.

Where to put razorbacks may need to be based on displacing some fish that are already coexisting with the razorback. What is in this system that can replace tropic levels - non natives? Bio energetics approach helped identify which fish need to be replaced. Took ones that were on the same trophic level. Do not want to displace native fish, so the researchers chose to displace 15% nonnative suckers (pikeminnow in Colorado for example). The researchers are trying to see measured growth and match eating to that (detritus, etc). What do the razorbacks need to consume at given ages? Data on observed growth in the fish is needed to determine how much food is needed. They have to eat/assimilate a lot more insects to get the growth. Insects are almost constantly reproducing in the system. Razorbacks need the energy from the insects in order to put on the weight. These insects, with short life cycles, put out generations almost instantly and constantly. They are not multi-year insects.

Get a lot faster growth on razorbacks then you do on flannelmouth. A 10 yr old (razorback) was 246 mm. Are they laying down annually? More than once in a year? Not likely, but the low growth of the flannelmouth, compared to razorback suckers, can hardly be believed. Invertebrate production is about 3,000 kilograms per mile per year. 60,000 kilograms per mile per year of food is available. Aneth is 5000 kg/mile/year - this is the most biomass measured. Low light intensity will get algae/plant production to the maximum. Russian olives and grasses help to maintain system? There is very little light penetration in the summer. If they get any light, they produce a lot until the light is gone (Grasses, leaves, and Russian olives). This is a highly unstable system because insects are turning over quickly. Mayflies are not seen, only those with very short life spans.

For the 2002 model development scope of work: complete the model; prepare briefing document to identify issues that the Biology Committee needs to address, create a list of assumptions and data/parameter table, hold a Biology Committee workshop, write the model documentation draft, and then write the final report.

Funding will determine when we can get back to full speed and provide all of the above information. ***The Committee agreed to be ready for the workshop 2 months after funding is received. The final report can be completed 9 months after that.***

The Biology Committee workshop will be held in Ft. Collins at Bill Miller's office.

Integration
Full data rather than partial data is needed for integration.

The Committee agreed to start counting the number of months from when the money is received. It will take 5 months of individual researcher work before Bill Miller can start on the integration report. It was observed that the Committee members all bought in on these deadlines six months ago. Time has been lost now, due to funding.

The researchers were asked if five months gives them enough time to look at their three years of data and write their reports. The Committee believes that they could start the integration report in June or July. The small bodied fish and the habitat mapping data are holding up the integration of the data.

Individual researchers and subgroups will meet from now until ***June15th***.
The Committee agreed that drafts will be due at that time. Then the integration can begin. From that, it appears that the Committee will need to change the March 31 deadline to June 31, and the end date from September 21 to December 21. The subgroups can start to integrate some of the data in an ongoing fashion. Individual reports cannot be started until all of the data is complete.

This year's annual report will include duties from last year's scopes of work.
Next year there will not be an integration, so it is good to have an annual report this year.

People need to be identified to take the lead on each area. It would be best to decide in the subgroup who will be the lead and take responsibility for those tasks. One person will have to take all the information and write it up, and then take it back to the subcommittees for review and rewrite. One person is still going to do 90% of the work.

This Committee has not done integration before. We have very little experience in knowing how long this is going to take. This is going to require a lot more integration than we have ever done before. We need to create fields and formats for similar data. If we had been contributing to the integrated data base for the last three years, we would be on our way. ***Get any data to Ron Bliesner for the integrated database as soon as possible. Ron will send out an update on what data has and has not been received.***

Bill Miller will extend the schedule out three months, based on the above discussion.

Physical data needs to be integrated with the biological data. The physical data needs to be incorporated in terms of habitat analysis. The population model will help to identify where the data needs to be blended. The biological and physical data

needs to be quantified and evaluated based on recovery needs.

In terms of the evaluation of standardized monitoring, is the right data being evaluated? Do the flow recommendations need to be revised or are they doing what we need them to do? In terms of evaluation of the species' response to the recovery actions and the flow recommendations, have any trends been noted in the response of the species?

The subgroups will be Biology and Physical. Once the members have been assigned, they need to get together to identify problems that are occurring with data collections.

Open Discussion
Bill Miller was selected as the new Chairman of the Biology Committee. Committee members are selected based on names and qualifications that are provided to Program Coordinator, who forwards them to the Biology Committee, who reviews and votes on them. **Tom Chart was referred to the Committee, who reviewed his qualifications, and voted to approve him as an official member of the Biology Committee.**

FY 2003 Scope of Work process

Scope of work - have a meeting to review the model and parameters. Add a data table with assumptions etc ahead of time so people have time to review prior to the workshop.

This meeting was adjourned at 5pm.

Thursday, February 21

Integration and Reporting

There was a suggestion that the Committee wait another year for the integration, especially if there are continued delays due to funding problems, and then problems with lack of base funding. The Coordination Committee will want to see progress on this 3 year report, but the Biology researchers have not received support (fiscally) and are being expected to perform in a timely fashion without the resources.

The Biology Committee agreed that the finish date would be 310 days from the date that everyone's funding is received (***Bill Miller will send out a revised schedule***). This is the amount of time that it will take to complete the integration. If we start working on something else, we cannot just drop another project when the San Juan money comes in. It seems that the Coordination Committee should address this issue. Will the principal investigators have to wait until Jan/Feb/March to receive funding? Maybe we should be talking about 2004 budgets now, in order to get out ahead of this thing.

Dave Propst pointed out that because of the State fiscal year, everything is put on hold after May 1 - until they balance the books. Perhaps Tom Chart can prioritize and work with the funding for the people who have State funding issues first. ***FWS will look into carryover funding to be able to proceed until new funding comes in.***

The Biology Subgroup will consist of (2 - 3 meetings):

FWS - Regions 6
FWS - Region 2 (non-native)
New Mexico
UNM
Bill Miller and/or staff
Steve Ross, if he can attend
Ron Ryel, if he can attend

The Physical Subgroup will include:

Vince LaMarra
Ron Bliesner
John Pitlik
Ron Ryel
Bill Miller
Pat Page for the Hydrology Committee - or Ron Bliesner can make a report to the Hydrology Committee.
Steve Cullinan
Tom Wesche

The Integration Subgroup:

Both Groups will select people to be on the Integration Subcommittee

Bill Miller will convene these meetings once funding is in place. Leads will be selected within each group based on their knowledge and interest. The first meeting will be 45 days after the individual researchers have started looking at the data.

All data should be in the standardized database. ***Ron Bliesner will distribute the new cd to the researchers of both groups before June 15. Everyone should send whatever data they have to Ron Bliesner ASAP.*** (Dale Ryden has everything in except the 2001 data.)

Peer Review Panel Comments and Discussion

Steve Ross commented that he does not see any problems at this time with the information that is being collected and the direction that the Committee is headed. It is too early to say that we should, or should not, be going in a certain direction.

Ron Ryel observed that the monitoring program is progressing as he would like to see. There are some details that still need to be worked out, but it seems to be heading in the right direction. He is heartened to see that we are moving forward with stocking program and trying to meet the recovery goals.

John Pitlik has some ideas but will get them to the subgroup and Ron Bliesner and Vince LaMarra on cobble transport, it is not necessary to discuss gravel transport here in this meeting.

The Peer Reviewers should comment on the success of the Biology Committee and the effectiveness of the research to date. This may help with contractual issues.

Shirley Mondy agreed to put a copy of the PER and all of the research reports that are available on a CD and send them to the peer reviewers.

FY 2003 Scope of Work Process

The Biology Committee scopes of work should tie into the Long Range Plan. Propagation for both pikeminnow and razorback will need to be done. The call for proposals is around March 30, with scopes of work coming in by April 30th.

The Committee needs to get the word out that it will be calling for proposals. The input received needs to tied in to the LRP. New/identified tasks need to be communicated so that the Committee knows what the list is. FWS is not likely to want growing razorback and pikeminnow to be contracted out. If anyone comes up with new tasks that are not being covered, they need to be submitted as a scope of work.

The Biology Committee agreed to submit their comments for new tasks with their LRP revisions and additions by March 19, and Shirley Mondy and Tom Chart will come up with the list to submit to the Biology Committee.

2002 Water Operations and Flow Recommendations

The sediment depths in the backwaters seem to have increased in 2001. Most backwaters are running about same as in 1999. This does not look like it would be a perturbated year where a big release would be needed. A 10,000 flow release cannot be made in a dry year. This release could only be made if last year was perturbated and the water is available for a 5000 release.

Last year was a perturbation year. Calculated perturbation days is 6. Turbidity is also 6 days. There has been about 5 or 6 storm event days. It is about the same every year. 11 or 12 days would be the trigger for a perturbation.

This is not a perturbation year, and the flow pattern would say no release is indicated for this year. A 5,000 cfs is not required unless it rains for a long period of time. The 8,000 cfs time frame is being pushed to the maximum. Pretty soon, we will need a cleansing with a continual spring runoff. A sustained high flow, like in 1993, is needed. ***Bill Miller, the new Chairman, agreed to get something to the BOR stating that this is not a perturbation year by March 10th.***

Pat Page said that the current forecast is that Navajo Dam is 60% full. The January forecast for the Basin was at 34% of normal. Operations of the dam utilize the forecasts through May.

We really need to take a look at what happened in the 1996-97 time frame. Why did the fish decrease and why did we have a new equilibrium? This could be discussed in the subgroups. The flow recommendations say we need a flush soon.

One more year is left before an 8000 cfs flush is needed. A high sustained spring run off year is needed, and over 10,000 cfs pretty soon. The system was reset in 1996 and has stayed about the same since then. Are the fish being negatively impacted? In 1994 -1995 the fish were doing one thing, and since 1996 the fish have been doing something drastically different. Is this an acceptable drastic change? There has been substantial change in primary and secondary channels since 1996. The fish have changed and the habitat has changed. The integration data needs to be closely reviewed to determine how important or serious this is.

Are our flow recommendations working? There is nothing in the presentations that indicated major changes in fish data to indicate a need to change the flow recommendations. No perturbation or large flows leads to non-native increases in the secondary channels, and perhaps in the main channels. With no spring runoff this year, we can probably anticipate lower native reproduction and more non-natives.

Flexibility in Base Flow Operations from an EIS Standpoint

The Biology Committee met in 2000 for a clarification on the low flow release. Mike Buntjer (the NEPA representative from FWS who is writing the Coordination Act Report) discussed what the biological trade offs are in having the low flows in the summer (such as impacts on other resources, such as other native fish) and provided the Committee with handouts.

Pikeminnow do occupy other habitats. Forty percent of collections came from other than backwaters. Some data indicate that these other types of habitat increase with higher flows. Some of the other habitats are optimized under 1,000 cfs. Dave Propst would like to see flows closer to the 1,000 cfs. There may be a trade off for higher base flows with higher spring releases.

Until there is additional water development, it is not necessary or efficient to push the flows down to 250 cfs in the irrigation season. There is a need to maintain the upper end (500-1000 cfs, with 1000 being the best) in the critical habitat. Low flows limit the big flow duration and frequency, but it does increase habitat. In the summer, it will be 500 cfs minimum, and whatever increases are necessary to keep flows high enough in the critical habitat. The Animas flow predictability will impact the practicality of reaching the 500 - 1000 cfs range. If water is conserved for when we need it, and the habitat is maintained, this can contribute to a big spring release.

If the Animas is at 900, and 250 cfs is released, we are still over the recommendations. Because of the peaks in the summer, these flows are really hard to chase. BOR needs one week notice in order to change flows. There is a delay due to the notice requirement, and a minimal gain in the number of days. Ron Bliesner strongly recommends not trying to chase 1000 (we cannot see the benefit), but to continue to keep flows above 500 cfs. Until we need to conserve water, to put it on the peak, it is not necessary/or effective, to push the flows down to 250 during the irrigation season.

A higher base flow in the summer helps the natives and suppresses the non-natives. Natives avoid areas with no flows. Non-natives do not. .

The Biology Committee recommends that the releases be as high as it needs to be to keep 500 cfs in the habitat range. ***Ron Bliesner will draft a letter for Bill Miller and the BOR.***

Fish Screens

There was a discussion of Bob Norman's handout on the need for fish screens. It does not make sense to spend the money on fish screens until it was clear that there was a problem. It still may be premature at this point. There is no data to show that it is a problem. In the Upper Basin, it is a major problem.

Maybe a Scope of Work is needed to look to see if there is a problem or not. This looks like it would be a good solution if there is a problem, but the Program does not want to spend a lot of money for little results. Let's evaluate the whole structure - are the fish using the fish passage and are there problems in the canals?
Fish screens are being used to keep fish out of the irrigation canals. The Upper Basin is spending a lot of money to keep fish out of irrigation canals. They would be used at the Hogback Diversion to keep fish out of the canals and put them back in the river. The fish passage goes off to the left and the fish screen is on the right. There is no indication that there is a problem in the San Juan.

The Committee suggested that new Scopes of Work for next year might include evaluating the problems and determining whether the fish are using the fish passage.

Meeting Summary Review and Approval
Approved as amended.

Scheduling

The Scopes of Work need to go to Shirley Mondy by April 30, with finals by June 15, and then they will be sent to the Coordination Committee in July. **The next meeting will be Tuesday, May 21, in Farmington, from 8am - 5pm.**

Frank Pfeifer will no longer be with the Program. The Biology Committee thanked Frank Pfeifer for his participation and efforts, and wished him luck in his new position.

Next Meeting Agenda Items:

FY03 scopes of work
Long Range Plan review